PROGRAMMING: ARRAY

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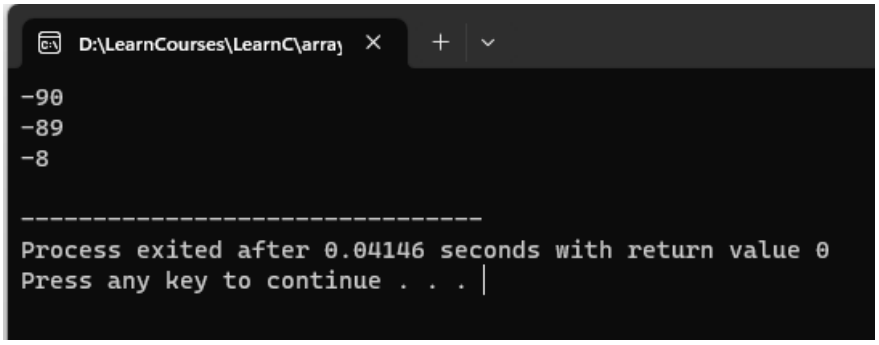
1. Write a C program to print all negative element from static array.

❖ Code:

```
#include<stdio.h>
int main() {
	int i, roll[5] = {-90, -89, 39, -8, 11};

	for (i = 0; i <= 4; i++) {
		if (roll[i] < 0) {
			printf("%d\n", roll[i]);
		}
	}
	return 0;
}
```

❖ Output:

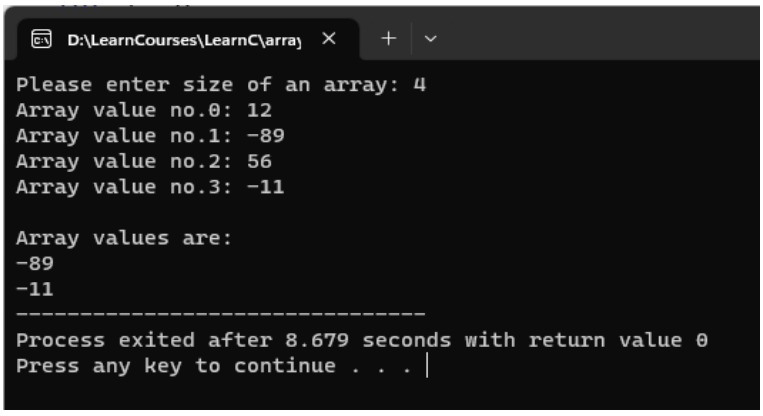


2. Write a C program to print all negative element from dynamic array.

❖ Code:

```
#include<stdio.h>
int main() {
	int i, n;
	int arr[100];
	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
		printf("Array value no.%d: ", i);
		scanf("%d", &arr[i]);
	}
	printf("\nArray values are: ");
	for (i = 0; i < n; i++) {
		if (arr[i] < 0) {
			printf("\n%d", arr[i]);
		}
	}
	return 0;
}
```

❖ Output:

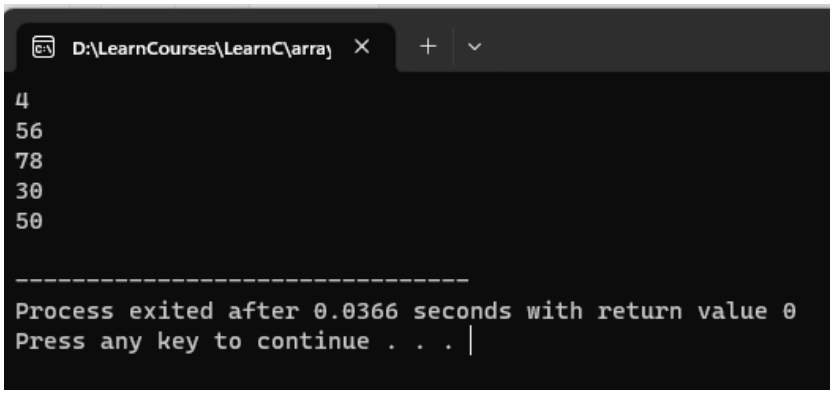


3. Write a C program to print all even element from static array.

❖ Code:

```
#include<stdio.h>
int main() {

	int i, num[10] = { 23, 4, 67, 56, 78, 45, 3, 30, 89, 50};

	for (i = 0; i <= 10; i++) {
		if (num[i] % 2 == 0) {
			printf("%d\n", num[i]);
		}
	}
	return 0;
}
```

❖ Output:

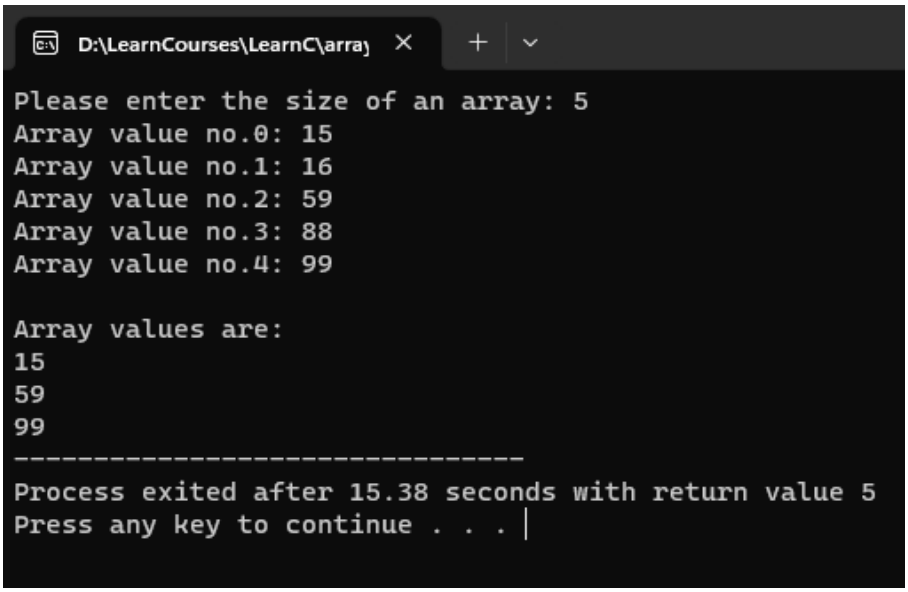


4. Write a C program to print all odd element from dynamic array.

❖ Code:

```
#include<stdio.h>
int main () {
        int i, n;
        int arr[100];
        printf("Please enter the size of an array: ");
        scanf("%d", &n);
        for (i = 0; i < n; i++) {
                printf("Array value no.%d: ", i);
                scanf("%d", &arr[i]);
        }
        printf("\nArray values are: ");
        for (i = 0; i < n; i++) {
                if (arr[i] % 2 == 1) {
                        printf("\n%d", arr[i]);
                }
        }
}
```

❖ Output:

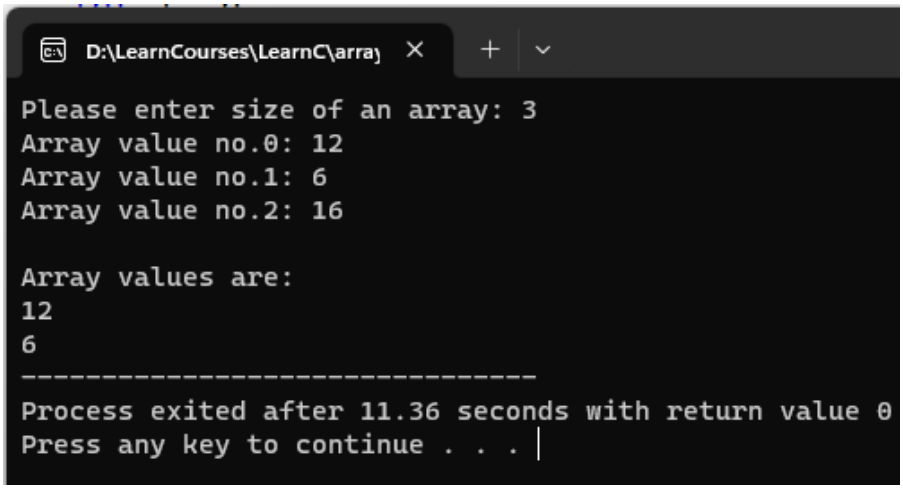


5. Write a C program to print all element that are divisible by 3 from dynamic array.

❖ Code:

```
#include<stdio.h>
int main() {
	int i, n;
	int arr[100];
	printf("Please enter size of an array: ");
	scanf("%d", &n);
	for (i = 0; i < n; i++) {
		printf("Array value no.%d: ", i);
		scanf("%d", &arr[i]);
	}
	printf("\nArray values are: ");
	for (i = 0; i < n; i++) {
		if (arr[i] % 3 == 0) {
			printf("\n%d", arr[i]);
		}
	}
	return 0;
}
```

❖ Output:

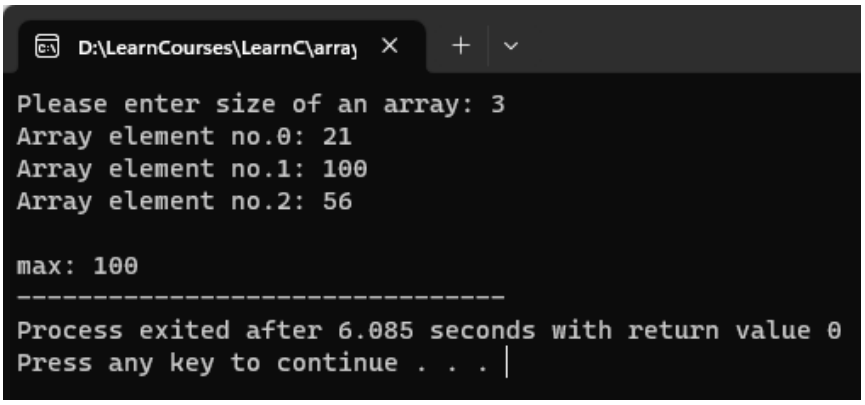


6. Write a C program to find max element from an dynamic array.

❖ Code:

```
#include <stdio.h>
int main() {
	int i, n, arr[i], max=0;
	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
	printf("Array element no.%d: ", i);
		scanf("%d", &arr[i]);
	}

	for (i = 0; i < n; i++) {
		if (arr[i] > max) {
			max = arr[i];
		}
	}
	printf("\nmax: %d", max);
	return 0;
}
```

❖ Output:

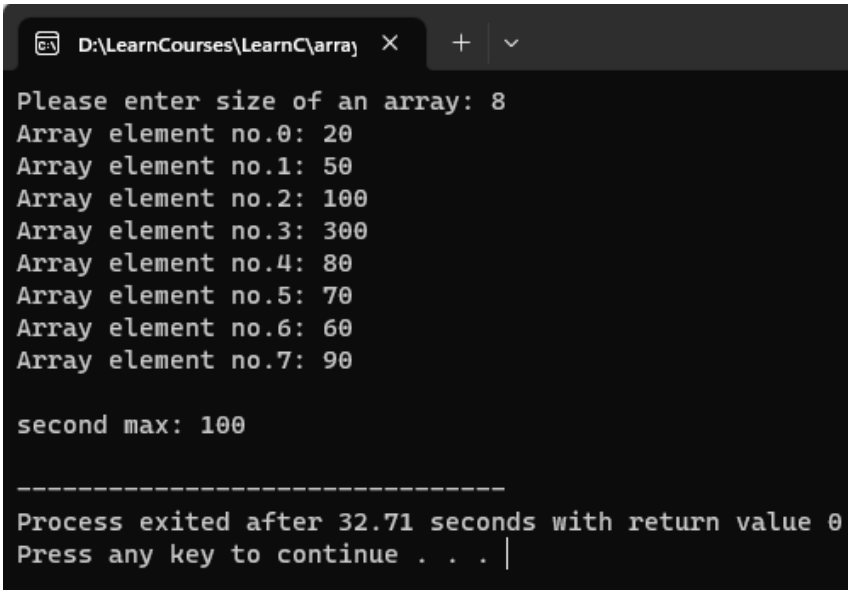


7. Write C program to find second largest number in array.

❖ Code:

```
#include <stdio.h>
#define MAX_SIZE 1000

int main() {
	int i, n, arr[MAX_SIZE], temp=0, max2=0;

	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
	   printf("Array element no.%d: ", i);
		scanf("%d", &arr[i]);
	}

	for (i = 0; i < n; i++) {
		if (arr[i] > temp) {
			max2 = temp;
			temp = arr[i];
		} else if (arr[i] > max2 && arr[i] < temp) {
			arr[i] = max2;
		}
	}
	printf("\nsecond max: %d\n", max2);

	return 0;
}
```

❖ Output:

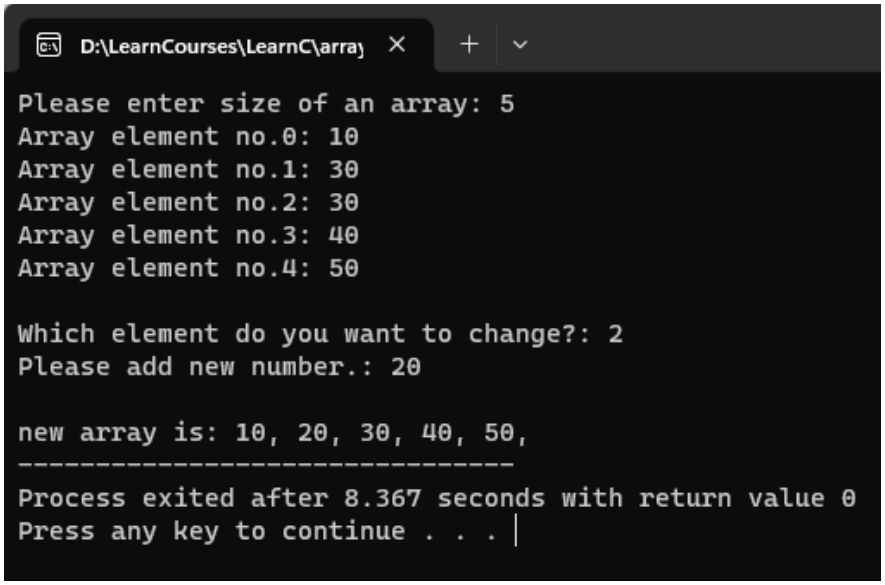


8. Write C program to Update the element into array.

❖ Code:

```
#include <stdio.h>
int main() {
        int i, n, arr[i], ind, newEle;

        printf("Please enter size of an array: ");
        scanf("%d", &n);

        for (i = 0; i < n; i++) {
        printf("Array element no.%d: ", i);
                scanf("%d", &arr[i]);
        }

        printf("\nWhich element do you want to change?: ");
        scanf("%d", &ind);

        printf("Please add new number.: ");
        scanf("%d", &newEle);

        arr[ind - 1] = newEle;

        printf("\nnew array is: ");

        for(i = 0; i < n; i++) {
                printf("%d, ", arr[i]);
        }
        return 0;
}
```

❖ Output:

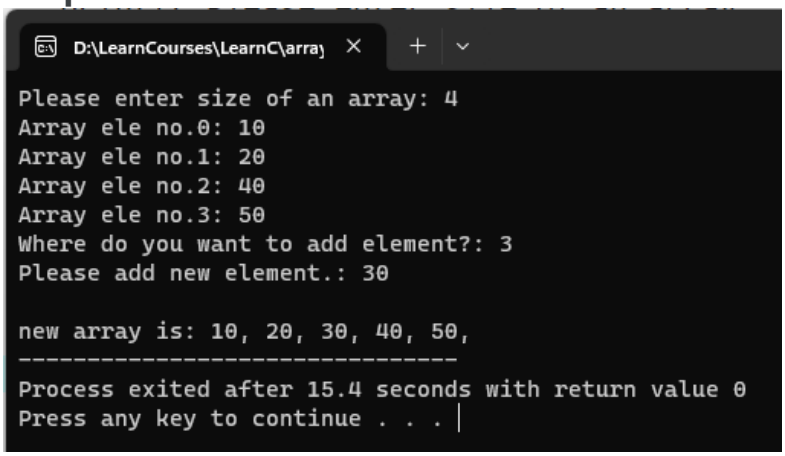


9. Write C program to Insert the element into array.

❖ Code:

```
#include <stdio.h>
int main() {
        int i, n, arr[i], ind, newEle;

        printf("Please enter size of an array: ");
        scanf("%d", &n);

        for (i = 0; i < n; i++) {
                printf("Array ele no.%d: ", i);
                scanf("%d", &arr[i]);
        }

        printf("Where do you want to add element?: ");
        scanf("%d", &ind);
        printf("Please add new element.: ");
        scanf("%d", &newEle);

        n++;

        for (i = n - 1; i >= ind; i--) {
                arr[i] = arr[i - 1];
        }

        arr[ind - 1] = newEle;

        printf("\nnew array is: ");
        for(i = 0; i < n; i++) {
                printf("%d, ", arr[i]);
        }
  return 0;
}
```

❖ Output:

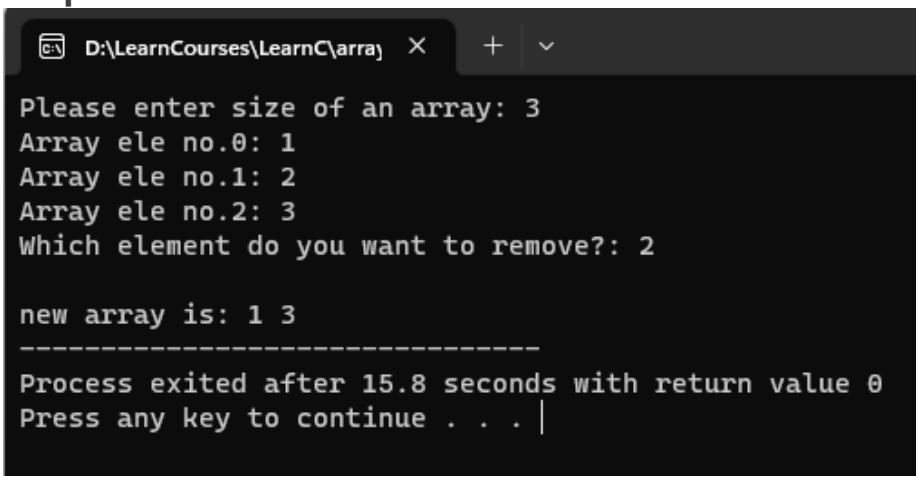


10. Write C program to Delete the element into array.

❖ Code:

```
#include <stdio.h>
int main() {
	int i, n, arr[100], ind;

	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
		printf("Array ele no.%d: ", i);
		scanf("%d", &arr[i]);
	}

	printf("Which element do you want to remove?: ");
	scanf("%d", &ind);

	n--;

	for (i = ind - 1; i <= n; i++) {
		arr[i] = arr[i + 1];
	}

	printf("\nnew array is: ");
	for(i = 0; i < n; i++) {
		printf("%d ", arr[i]);
	}

	return 0;
}
```

❖ Output:

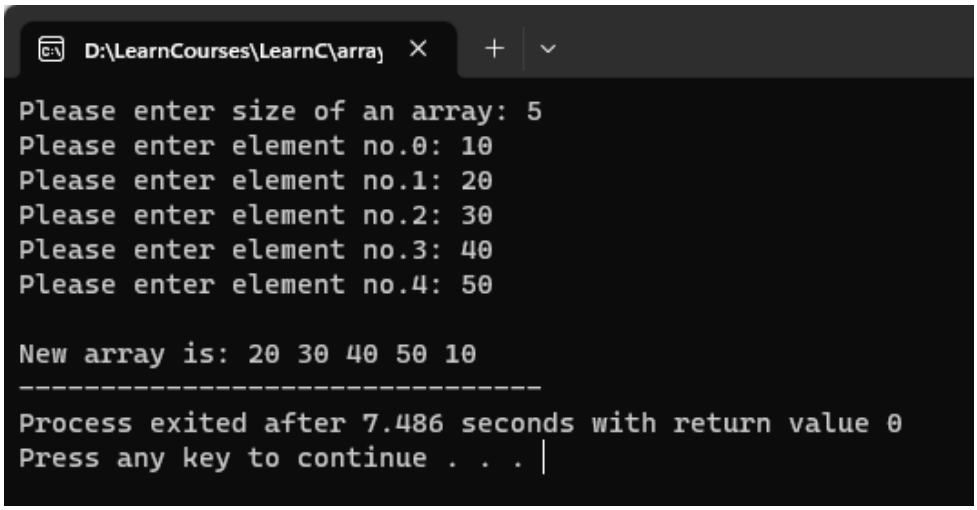


11. Write C program to left rotate an array element.

❖ Code:

```
#include <stdio.h>

int main() {
	int i, n, arr[100], first;

	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
		printf("Please enter element no.%d: ", i);
		scanf("%d", &arr[i]);
	}

	first = arr[0];

	for (i = 0; i < n; i++) {
		arr[i] = arr[i + 1];
	}

	arr[n - 1] = first;

	printf("\nNew array is: ");
	for (i = 0; i < n; i++) {
		printf("%d ", arr[i]);
	}

	return 0;
}
```

❖ Output:

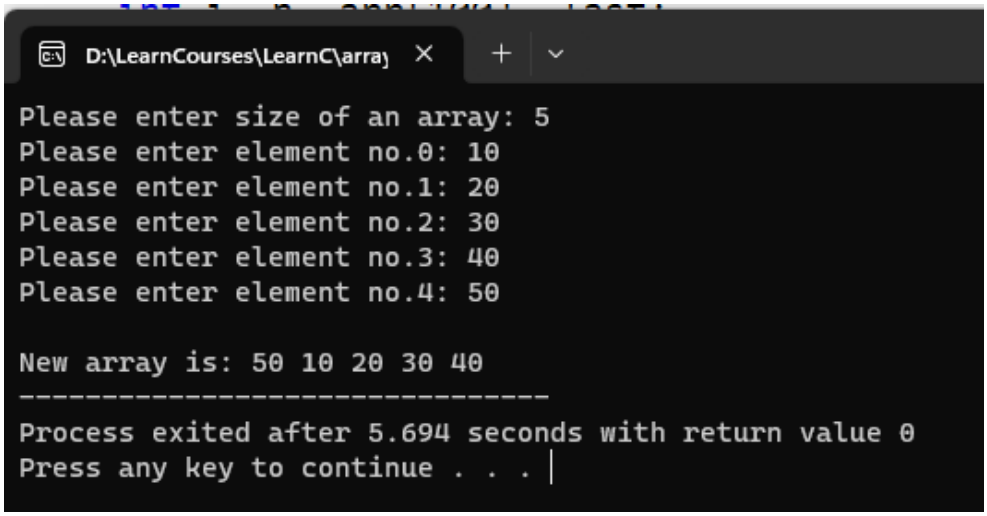


12. Write C program to right rotate an array element.

❖ Code:

```
#include <stdio.h>

int main() {
	int i, n, arr[100], last;
	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
		printf("Please enter element no.%d: ", i);
		scanf("%d", &arr[i]);
	}

	last = arr[n - 1];

	for (i = n - 1; i >= 0; i--) {
		arr[i] = arr[i - 1];
	}

	arr[0] = last;

	printf("\nNew array is: ");
	for (i = 0; i < n; i++) {
		printf("%d ", arr[i]);
	}

	return 0;
}
```

❖ Output:

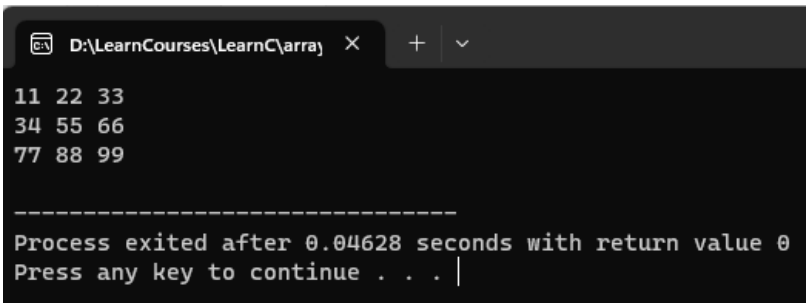


13. Write C program to addition of two matrices.

❖ Code:

```
#include<stdio.h>

int main() {
        int arr1[3][3] = {
                {10, 20, 30},
                {30, 50, 60},
                {70, 80, 90}

        };
        int arr2[3][3] = {
                {1, 2, 3},
                {4, 5, 6},
                {7, 8, 9}
        };

        int i, x;
        int res[3][3] = {0};

        for (i = 0; i < 3; i++) {
                for(x = 0; x < 3; x++) {
                        res[i][x] = arr1[i][x] + arr2[i][x];
                }
        }

        for (i = 0; i < 3; i++) {
                for(x = 0; x < 3; x++) {
                        printf("%d ", res[i][x]);
                }
                printf("\n");
        }
        return 0;
}
```

❖ Output:

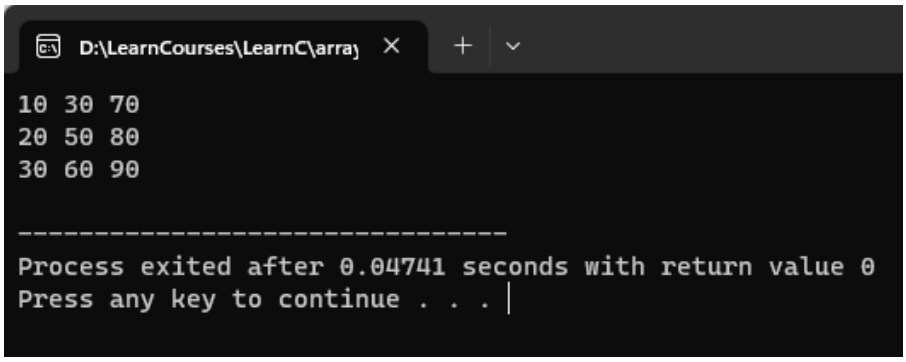


14. Write C program matrix convert into transpose matrix.

❖ Code:

```
#include<stdio.h>

int main() {
	int arr[3][3] = {
		{10, 20, 30},
		{30, 50, 60},
		{70, 80, 90}

	};

	int i, x, trans[3][3] = {0};

	for (i = 0; i < 3; i++) {
		for(x = 0; x < 3; x++) {
			trans[x][i] = arr[i][x];
		}
	}

	for (i = 0; i < 3; i++) {
		for(x = 0; x < 3; x++) {
			printf("%d ", trans[i][x]);
		}
		printf("\n");
	}
	return 0;
}
```

❖ Output:

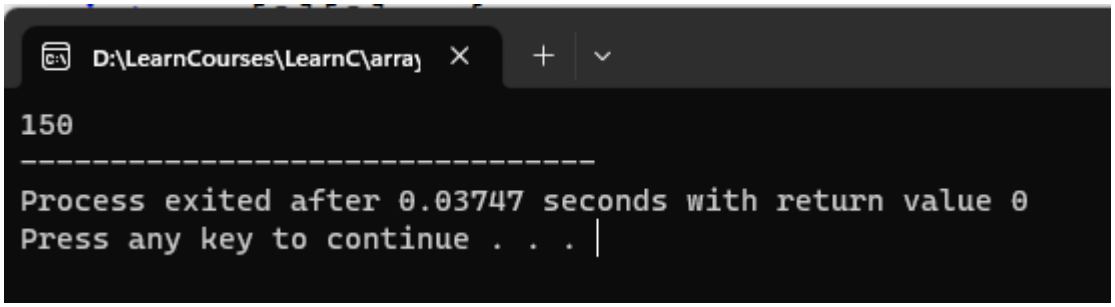


15. Write C program to find sum of diagonal elements of a matrix.

❖ Code:

```
#include<stdio.h>

int main() {
        int arr[3][3] = {
                {10, 20, 30},
                {30, 50, 60},
                {70, 80, 90}

        };

        int i, x, sum = 0;

        for (i = 0; i < 3; i++) {
                for(x = 0; x < 3; x++) {
                        if(i == x) {
                                sum = sum + arr[i][x];
                        }
                }
        }

        printf("%d", sum);
        return 0;
}
```

❖ Output:

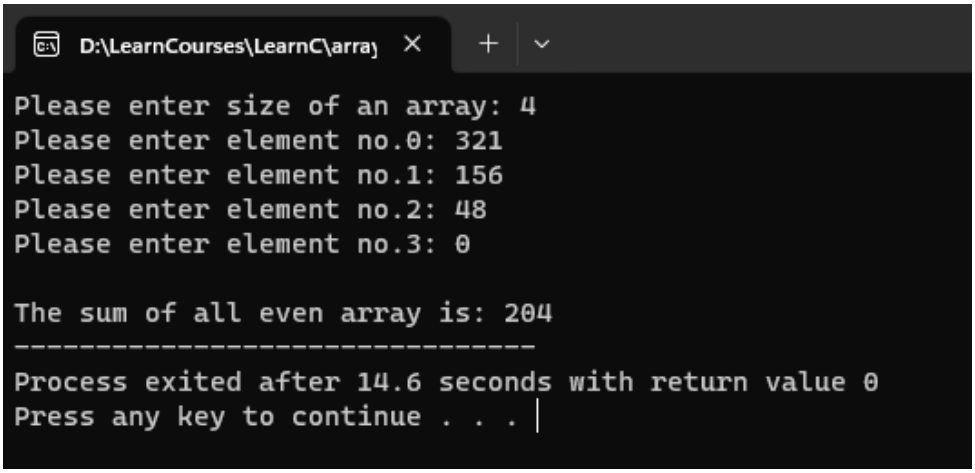


16. Write a C program to sum of all even element from an array.

❖ Code:

```
#include <stdio.h>

int main() {
	int i, n, arr[i], sum=0;

	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
		printf("Please enter element no.%d: ", i);
		scanf("%d", &arr[i]);
	}

	for(i = 0; i < n; i++) {
		if(arr[i] % 2 == 0) {
			sum = sum + arr[i];
		}
	}

	printf("\nThe sum of all even array is: %d", sum);

	return 0;
}
```

❖ Output:

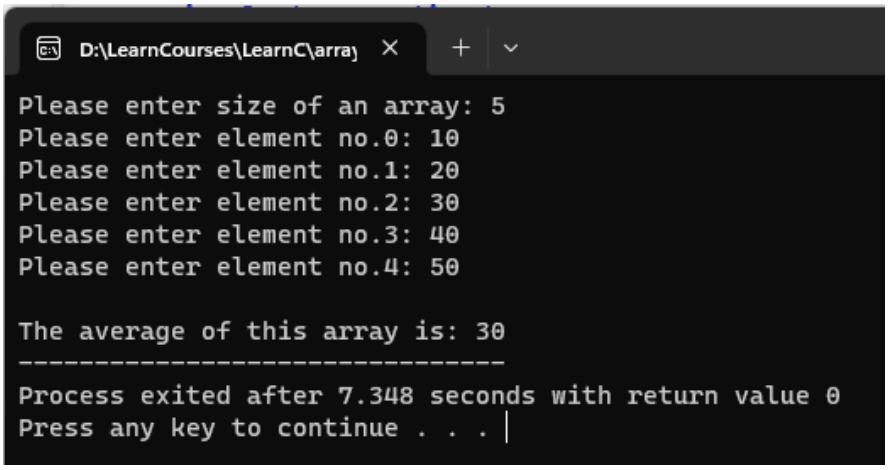


17. Write a C program to find average of an element from an array.

❖ Code:

```
#include <stdio.h>

int main() {
	int i, n, arr[i], sum=0, avg=0;

	printf("Please enter size of an array: ");
	scanf("%d", &n);

	for (i = 0; i < n; i++) {
		printf("Please enter element no.%d: ", i);
		scanf("%d", &arr[i]);
	}

	for(i = 0; i < n; i++) {
		sum = sum + arr[i];
		avg = sum / n;
	}


	printf("\nThe average of this array is: %d", avg);
	return 0;
}
```

❖ Output:

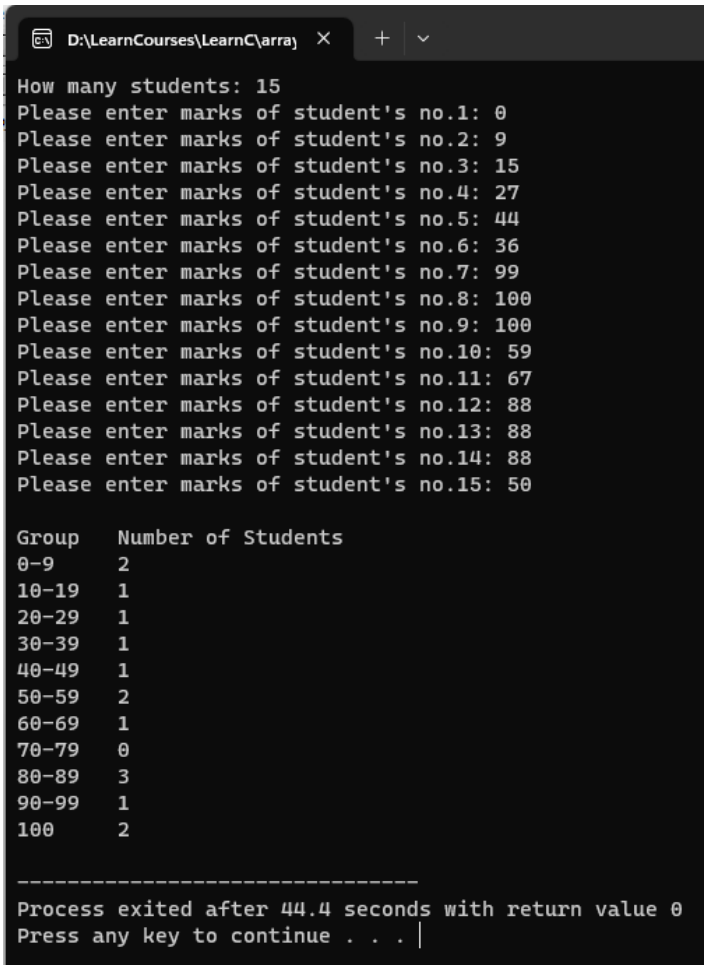


18. Write a C program to count number of students in each group (0-9, 10- 19, 20-29 .... 90-99, 100-100) for the given students marks.
Marks: 85, 66, 37, 45, 68, 23, 99, 100, 81, 70, 42, 55, 68, 77, 96, 18

❖ **Code:**

```
#include <stdio.h>
int main() {

   int marks[100], i, n, group, count[11] = {0};
   printf("How many students: ");
        scanf("%d", &n);

        for (i = 0; i < n; i++) {
                printf("Please enter marks of student's no.%d: ", i + 1);
                scanf("%d", &marks[i]);
        }

   for (i=0; i<n; i++) {
      group = marks[i] / 10;
      count[group]++;
   }

   printf("\nGroup\tNumber of Students\n");

   for (i=0; i<10; i++) {
      printf("%d-%d\t%d\n", i * 10, i * 10 + 9, count[i]);
   }

   printf("100\t%d\n", count[10]);
   return 0;
}
```

❖ **Output:**


D:\LearnCourses\LearnC\arra
How many students: 15
Please enter marks of student's no.1: 0
Please enter marks of student's no.2: 9
Please enter marks of student's no.3: 15
Please enter marks of student's no.4: 27
Please enter marks of student's no.5: 44
Please enter marks of student's no.6: 36
Please enter marks of student's no.7: 99
Please enter marks of student's no.8: 100
Please enter marks of student's no.9: 100
Please enter marks of student's no.10: 59
Please enter marks of student's no.11: 67
Please enter marks of student's no.12: 88
Please enter marks of student's no.13: 88
Please enter marks of student's no.14: 88
Please enter marks of student's no.15: 50
Group Number of Students
0-9 2
10-19 1
20-29 1
30-39 1
40-49 1
50-59 2
60-69 1
70-79 0
80-89 3
90-99 1
100 2
Process exited after 44.4 seconds with return value 0
Press any key to continue . . .